

Clinical, Radiographic and Biochemical Evaluation of Fluoride Modified Titanium Endosseous Dental Implants in Periodontally Compromised and Healthy Patients

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Objective: The result of implant treatment in healthy subjects and patients with a history of periodontitis is still unclear. Therefore, in this study, we aimed to evaluate the partially edentulous periodontally compromised and healthy patients treated with fluoride modified dental implants clinically, radiographically and biochemically in terms of investigating peri-implant sulcus fluid levels of osteocalcin and type I collagen telopeptide.

Methods: Thirteen periodontally healthy subjects and 12 periodontally compromised patients were included and evaluated at days 0., 10., 40., 63., 90, and 180. Clinical assessments included plaque index, gingival index (GI), probing depth, and width of keratinized tissue (WKT). Standardized periapical radiographs were taken to examine the relationship between the implant and surrounding bone. Peri-implant sulcus fluid samples were taken and enzyme-linked immunosorbent assay was performed for biochemical evaluation.

Results: There were no differences between the groups regarding clinical parameters ($p>0.05$). However, WKT at implant sites decreased significantly within both groups ($p<0.05$). No significant difference was found between the groups at radiographical assessment ($p>0.05$). Osteocalcin concentration was found to be significantly higher in the healthy group than the periodontitis group ($p<0.05$), but no difference was found between the groups in terms of the level of type I collagen telopeptide.

Conclusion: Although the biochemical results suggested more bone formation in healthy patients than the patients with the history of periodontitis, prospective longitudinal studies are required to support the possibility of better bone metabolism in periodontally healthy subjects.

Key words: Dental implant, fluoride-modified surface, osteocalcin, periodontitis, telopeptide of type I collagen